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ABSTRACT

Although occupational sex segregation has decreased over the last 25 years, it is still a major social concern primarily because of the role it plays in perpetuating the gender wage gap. This paper uses data from the Wisconsin Longitudinal Study, a study that followed a random sample of 10,317 high school graduates, to assess the determinants of women's movement into and out of male-dominated occupations. In this study, the gender type of occupations changes with time; that is, the shifting gender compositions of occupation categories from 1960 to 1990 is taken into account. Event history analysis is used to ascertain the relative risk of a woman's entering and leaving a male-dominated occupation. The hazard rates are then used to project the change expected in the overall distribution of women in male-dominated and nonmale-dominated occupations, and periods out of the labor force, over time. The analysis evaluated gender role socialization and neoclassical economic theories of occupational sex segregation by including a number of covariates that measure background characteristics and the timing of life course events of the woman, characteristics of jobs the woman enters over her career, and indicators of opportunity in the local labor market. The results show support for sex role socialization as an explanation for women's movement into sex-atypical occupations, and show that having aspirations for a male occupation, in particular, is associated with increases in the percentage of women employed in male-dominated occupations over time. Neither neoclassical economic theories nor demand-side theories are well-supported. These results are compared with those of J. A. Jacobs (1989), and it is concluded that sex role socialization is important in perpetuating occupational sex segregation. (Contains 7 tables, 6 figures, and 45 references.) (Author/SLD)

Center for Demography and Ecology

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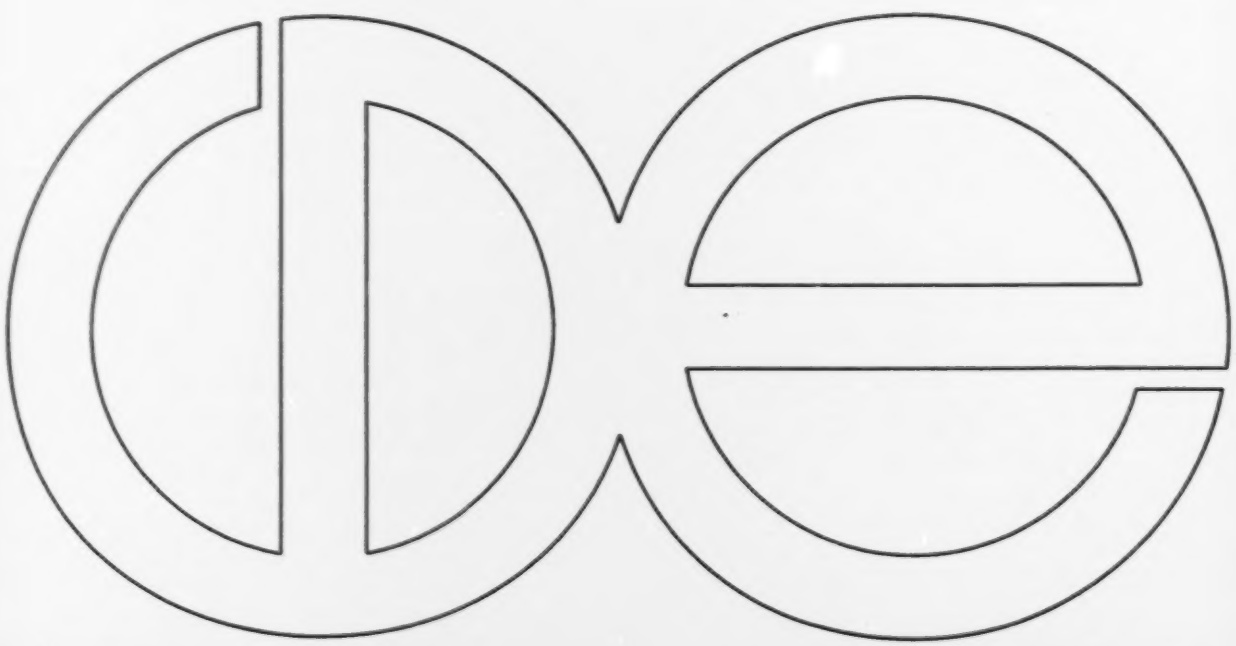

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The Effects of the Determinants of Women's Movement Into and Out of Male-dominated Occupations on Occupational Sex Segregation[1]

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ABSTRACT

Though occupational sex segregation has decreased over the last twenty-five years, it is still a major social concern primarily because of the role it plays in perpetuating the gender wage gap. This paper uses data from the Wisconsin Longitudinal Study to assess the determinants of women's movement into and out of male-dominated occupations. In this study, the gender type of occupations changes with time; that is, the shifting gender compositions of occupation categories from 1960 to 1990 is taken into account. Event history analysis is used to ascertain the relative risk of a woman's entering and leaving a male-dominated occupation. These hazard rates are then used to project the change expected in the overall distribution of women in male-dominated and non-male dominated occupations, and periods out of the labor force, over time. The analysis evaluates gender role socialization and neoclassical economic theories of occupational sex segregation by including a number of covariates that measure background characteristics and the timing of life course events of the woman, characteristics of the jobs the woman enters over her career, and indicators of opportunity in the local labor market. The results show support for sex role socialization as an explanation for women's movement into sex-atypical occupations, and show that having aspirations for a male occupation, in particular, is associated with increases in the percentage of women employed in male-dominated occupations over time. Neither neoclassical economic theories nor demand-side theories are well-supported. These results are compared with those of Jacobs (1989b), and I conclude that sex role socialization is important in perpetuating occupational sex segregation.

In his 1989 book *Revolving Doors*, Jerry Jacobs encouraged researchers of occupational sex segregation to think of women's movement across occupational sex-type boundaries as a process, rather than as a single event which ends when a woman enters a male-dominated occupation category. He writes, "the revolving door sends ten out for every eleven it lets in" (Jacobs 1989b, pg. 4). In this paper, I will use event history analysis to evaluate three theoretical explanations for occupational sex segregation: human capital theory, gender role socialization, and demand for workers. Specifically, this paper shows which factors most affect the long-term flows of women into and out of male-dominated occupation categories, and which therefore reduce levels of occupational sex segregation in the aggregate over time. This analysis is performed on 5,042 women from the Wisconsin Longitudinal Study, whose lives and work histories have been followed from their high school graduation in 1957 to their early fifties, in 1992/93. The results show that early socialization factors have the power to alter the sex composition of occupational categories over the long run. Those factors associated with the human capital model of occupational sex segregation (family responsibilities, educational attainment, time out of the labor force, etc.), and the demand-side characteristics of the labor market have little effect on the levels of occupational sex segregation in the labor force over time.

Occupational Sex Segregation

It is clear that the U.S. labor force is highly segregated by gender. As of 1994, over fifty percent of women (or of men) would have to change jobs in order for the sexes to be equally distributed throughout the roughly 500 1990 Census three-digit occupation categories (Wright and Jacobs 1994). This phenomenon, known as occupational sex segregation, is an enduring

feature not only of the U.S. labor market, but of industrialized labor markets in general. The pervasiveness of occupational sex segregation in the U.S. labor force has major consequences. The much-publicized wage gap between women and men in the U.S. is largely attributable to occupational sex segregation, after controlling for hours worked per year and labor force experience (Cotter et al. 1997; Reskin and Padavic 1994; England 1992; Treiman and Hartmann 1981). Furthermore, limiting the occupational choices available to persons on the basis of their gender not only limits productivity (Reskin and Padavic 1994), but limits personal fulfillment as well (Hyde 1996, pg. 198).

From 1900 to 1970, the level of occupational sex segregation as measured by the Index of Dissimilarity (ID)[2] declined very slowly in the U.S., by between two and ten percent. Because of the incomparability of occupational categories during this time, and because of different methods of calculating the ID, estimates of the decline range from 15.6 to 25.4 points, to a value of approximately 72 in 1970 (Fields and Wolff 1991; England 1981). Between 1970 and 1980, the ID declined another ten percent or more to about 64 (Reskin 1993; Fields and Wolff 1991; Jacobs 1989a, 1989b). During the 1980s, the rate of decline stalled, but some decrease in the levels of occupational sex segregation was observed to bring the ID to around 60 in the 1980s and between 55 and 50 in the 1990s (Wright and Jacobs 1994; Reskin 1993; Goldin 1990; Jacobs 1989b).

The high levels of occupational sex segregation are difficult to explain in a competitive labor market—employers should hire those persons most qualified for a job regardless of gender,

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[2] Developed by Duncan and Duncan (1955), the Index of Dissimilarity can be interpreted as the percentage of workers who would have to change occupations in order for the sexes to be distributed across occupations in the same proportions they exist in the entire workforce (Reskin 1993; Reskin and Hartmann 1986).

and employees should move to those occupations for which they are most amply rewarded. Explanations for why women and men are not equally distributed throughout the occupational structure can be divided into two groups. The first group uses characteristics of the workers to explain the sex segregation of occupations. These "supply-side" explanations ultimately explain occupational sex segregation through the choices of individual men and women. The second group of explanations, "demand-side," focuses on the role of employing organizations and labor force characteristics in maintaining the gender segregation of occupations.

Theories of Occupational Sex Segregation

Supply-Side Theories: Neoclassical Economics

Neoclassical economic theories assume that employees and employers are rational actors, and that observed patterns in the labor force can be explained by observing how each actor attempts to maximize his or her utility (usually defined as lifetime earnings) in a given situation. The *human capital theory* as expounded by Polachek (1979; 1981), explains that women choose female-dominated jobs because these jobs better reward them, given their family commitments, intermittent labor force participation, and part-time work requirements. The theory assumes that, because of their commitments to home and family, women must spend some of their childbearing years out of the labor force. Because they are not working, their unused skills become rusty, or "depreciate." At the same time, by being out of the labor force, women are not able to accrue work experience or invest in on-the-job training and so they experience the "foregone appreciation" of human capital (England, Kilbourne, Farkas, and Dou 1988; England 1982). Human capital theory suggests that women gravitate into women's jobs because they do not require a great deal of effort or commitment, and the skills needed to do these jobs do not

deteriorate when they are not used for a period of time. Furthermore, women's jobs have a lower return for labor force experience and less on-the-job training. Thus, the theory explains the movement of women into these female-dominated jobs, because depreciation of skills is penalized less, and the foregone appreciation of human capital which occurs when women leave the labor force is less than in male jobs (Reskin and Padavic 1994; England et al. 1988; England 1982).

Researchers evaluating the human capital theory as an explanation for occupational sex segregation have looked at both the characteristics of women (their family commitments, levels of education, time out of the labor force), and the characteristics of female-dominated occupations (wages, part-time work). Both types of analysis find the human capital model unconvincing. The presence of children appears to increase rather than decrease the movement of women into male-dominated occupations (Beller 1982; Rosenfeld 1983; Rosenfeld and Spenner 1992) and marriage seems to have little relationship to the sex-type of a woman's occupation (Rosenfeld 1983; Beller 1982). Those researchers who have evaluated the characteristics of female jobs, and the notion that female-dominated jobs have advantages for mothers, have similar criticisms of the human capital model of occupational sex segregation. England (1984; 1982; England et al. 1988) has convincingly challenged the idea that female-dominated occupations penalize women less than male-dominated ones for time spent out of the labor force. She found that clerical workers actually suffer higher penalties for time spent out of the labor force than non-teaching professionals or operatives, and concludes that there is "no significant tendency for predominantly female occupations to offer women lower rates of depreciation or foregone appreciation" (England 1982, pg. 366).

Supply-Side Theories: Gender Role Socialization

Another supply-side explanation for occupational sex segregation is gender role socialization. This theory suggests that women *choose* to work in female-dominated occupations because they are socialized to act in certain "feminine" ways, and female-dominated jobs utilize these traits, while male-dominated jobs do not. For example, Sears, Roebuck, & Co. was sued by the Equal Employment Opportunities Commission in the 1980s because Sears employed men in the higher-paying commission-sales positions, and women in the lower-paying retail sales positions. The judge in the case ruled that women *chose* the lower-paying jobs because "Women tend to be more interested than men in the social and cooperative aspects of the workplace. Women tend to see themselves as less competitive. They often view non-commission sales as more attractive than commission sales, because they can enter and leave the job more easily, and because there is more social contact and friendship, and less stress in noncommission selling" (EEOC v. Sears, Roebuck, & Co. 1988, as cited in Reskin and Padavic, 1994, pg. 75). Thus, women's socialization to have traits such as passivity and cooperation leads them choose the jobs that complement their "feminine" qualities.

Unlike neoclassical economic theory, gender-role socialization theory has been more fruitful in explaining women's mobility out of female-dominated jobs. Quantitative studies which used measures of sex-role socialization other than occupational aspirations report interesting results. Waite and Berryman (1985) found that girls whose mothers worked in a blue-collar job were more likely to end up in a male-dominated occupation. Similarly, Rosenfeld and Spenner (1992) found that girls with strong work orientations were slower to leave male occupations, and that girls who expected to hold high-status jobs were quicker to leave female jobs when they began working. When occupational aspirations are used as a proxy for the rigidity of a person's gender-role socialization, researchers have had mixed conclusions.

Kathleen Gerson, in her qualitative study on women's career choices, found that "over two-thirds of the women who expressed rising aspirations toward nontraditional pursuits experienced some form of upward mobility out of dead-end jobs, and especially out of job categories dominated by females" (Gerson 1985, pg. 81). Jacobs (1989b) shows that women who had aspirations for a female job when younger are almost as likely to work in a male-dominated occupation at some point in their lives as women with male aspirations. He concludes that occupational aspirations, and sex role socialization, are just one element of the social control which keeps women from entering and staying in male-dominated occupations, and that other mechanisms become more important over the life course (Jacobs 1989b). These studies indicate that the gender role socialization of girls appears to have some impact on their eventual choice of a sex-atypical occupation, but that other mechanisms are required to recreate the current levels of occupational sex segregation.

Demand-Side Theories: Demand for Workers

One demand-side theory explains occupational sex segregation by looking at the demand for workers in the labor force. It posits that when the pool of preferred workers for a sex-typed occupation is restricted, employers increasingly turn to other workers to fill the jobs (Reskin and Roos 1990). Thus, occupational growth and low unemployment should increase women's access to male-dominated jobs. Occupational growth does appear to enhance women's access to male-dominated occupations. Jacobs' (1992) study of the growth of managerial jobs estimated that this occupational growth accounted for one-fourth of the decline in occupational sex segregation between 1970 and 1990. Industrial growth, on the other hand, is associated with a decline in women's access to occupations (Glass, Tienda and Smith 1988). Finally, although unemployment rates are an indicator of labor supply, they have not been associated with changes

in occupational sex composition (Jones and Rosenfeld 1989; Reskin and Roos 1990).

Study Objectives

This analysis will expand on previous work on occupational sex segregation in two ways. First, the difficulty of studying a phenomenon where the categories under analysis ("male-dominated occupation") are shifting over time will be addressed by allowing this shifting to occur. Previous studies of occupational sex segregation define a "male-dominated" category with a static definition, for example 30% female or less (Rosenfeld and Spenner 1992; Jacobs 1989b) which does not change over time. Second, rather than studying occupational sex segregation as an event which only occurs at the micro-level, I will be using the hazard rates from my event history analysis to project the distribution of the female workforce into male-dominated and non-male-dominated occupations over time. This allows me to evaluate which factors are associated with long-term change in the occupational sex structure at the macro-level, rather than merely predicting which individual women will enter or leave a male-dominated occupation category.

Data

I will perform an event history analysis using data for the women in the Wisconsin Longitudinal Study (WLS). The WLS has followed the lives of a random sample of 10,317 high school graduates from Wisconsin's class of 1957 from high school graduation to 1992, when respondents were roughly 53 years old. Survey data were collected from the graduates during the spring of their senior year of high school in 1957, from their parents and from institutional records in 1964, and again from the graduates in 1975 and 1992/93. The data collected include

detailed work histories, social and economic characteristics of parents, occupational aspirations (measures taken at age 17 and at age 35), marriage and childbearing histories, and measures of ability and achievement. The cohort of graduates was mainly born in 1939, and therefore the respondents were in their early fifties at the last survey wave. The sample is broadly representative of white Americans who have completed at least a high school education.[3] Very few minority persons are represented, and because of the sampling frame, all members of the sample have a high school education or more. In my analysis, I will limit the sample to the 5,042 women who participated in either the 1975 wave, the 1992 wave of the study, or both (see Table 1).[4]

Sample Description

The WLS women are a particularly good cohort to analyze for this study, as they were in the middle of their working lives in the 1970s when many of the changes in the female labor force began to occur—in particular, the decrease in occupational sex segregation. The WLS women, 99 percent of whom have worked for pay at some time in their lives (see Table 1), were in their mid-30s when the shifts in the Index of Dissimilarity began to occur in the 1970s. More than 16 percent of the WLS women entered a male-dominated occupation at some time in their working lives. This figure is far lower than the 31.5 percent of women in a Washington (state) cohort[5] who moved from a non-male occupation to a male-dominated one, but in this analysis I

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[3] Among Americans aged 50-54 in 1991, approximately 66 percent were non-Hispanic white high school graduates (Kominski and Adams 1992).

[4] 10.5 percent of the 5,042 women were respondents in 1975 only, 4.7 percent were respondents in 1992/93 only, and 84.8 percent were respondents in both waves.

[5] The Washington State Career Development Study interviewed juniors and seniors in Washington State public high schools during the 1965-66 academic year, and follow-up interviews were

use a much more stringent definition of "male-dominated occupation" than that used in Rosenfeld and Spenner's (1992) study.[6] If the same definition of a male-dominated occupation that Rosenfeld and Spenner (1992) used is applied to the WLS data, then rates of movement into male occupations are very close to those for the Washington State sample, with 34.5 percent making a move to a male-dominated occupation (not shown). Both the WLS sample and Rosenfeld and Spenner's (1992) sample show higher rates of movement than either the National Longitudinal Study of Mature Women (NLS-MW) (1967-1977), or the 1980-1981 CPS (Jacobs 1989b). Perhaps there is an over-representation of movers in the former samples due to the use of complete job histories, as opposed to measurement of current occupation taken at two points in time (Rosenfeld and Spenner 1992), or perhaps both samples' over-representation of white high school graduates explains the higher rates of movement of women into male-dominated occupations.

Evidence for the "revolving door" phenomenon described by Jacobs (1989b) is also present in the WLS sample. Of those women who entered a male-dominated occupation, more than two-thirds (68 percent) moved out of the occupation, either changing to a non-male-dominated occupation category, or moving out of the labor force altogether (see Table 1). This figure is higher than both Rosenfeld and Spenner's results and those for the NLS-MW and CPS samples. This discrepancy is probably a result of the older age and longer work histories of the WLS women analyzed in this study, and also a result of the more restrictive definitions of "male-

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completed in 1979, when the respondents were entering their thirties (Rosenfeld and Spenner 1992). This cohort is approximately ten years younger than the WLS cohort.

[6] Rosenfeld and Spenner's (1992) definition of a male-dominated occupation was one whose 1970 three-digit occupation category was 30 percent female or less in 1970. The definition used in this study is time-varying, and the cutoffs range from 17 percent to 23 percent (see below).

dominated occupation" used in this analysis. The types of male-dominated occupations that WLS women most often entered were not typical blue-collar jobs, but rather were higher prestige jobs in managerial and supervisory categories. A full 50 percent of the male-dominated jobs taken by WLS women fall into just nine categories—sales managers (except retail trade), managers and administrators (not elsewhere classified), sales representatives (wholesale trade), sales workers (except clerks, retail trade), shipping and receiving clerks, stock clerks and storekeepers, farmers, and farm laborers (wage workers).

The job histories of the WLS women were constructed from a variety of questions from both the 1975 survey, and the 1992/93 survey. For those respondents who answered only the 1992/93 survey, data about the "first full-time job after leaving school for the last time" was collected, so these respondents are not left-censored at 1975. Educational histories (both college and vocational) and military experience were both used in combination with the work histories to determine when a woman was not in the labor force. If a woman was not working, not in school, and not in the military for nine months or more, I consider this to be a period of home time. Table 2 lists the means and standard deviations of numbers and lengths of the constructed job spells and periods out of the labor force.

Methods

I use event history analysis to examine the process of women's movement among male-dominated occupations, non-male occupations, and out of the labor force (see Figure 1). The data is analyzed in three-month period-records, and the period at risk of movement among my three states begins when the respondent leaves school for the last time. The respondents begin in one of three states: male-dominated occupation category, non-male occupation, or out of the

labor force. During the observation period, they are allowed to move freely among these three states, and a respondent's person-record is only truncated when she leaves the study (either in 1975 or in 1992/93). As is shown in Figure 1, there are heavy flows of women between the states of "non-male occupation" and "out of the labor force." The numbers within the boxes indicate the numbers of women occupying each state at the time her record was truncated, and these add up to the total number of respondents, 5,042.

I take account of the shifting definition of "male-dominated" occupation category in the construction of the person-record file. Using a single "percent female" cutoff might seriously distort the results of this analysis, because of the length of the WLS study. During the 1957 through 1993 time period studied, U.S. women increased their participation in the labor force from 33 to 46 percent, and the gender-types of many occupation categories have shifted; using a crude procedure to express 1960, 1980, and 1990 occupations in terms of the 1970 three-digit occupation categories, 69 of the roughly 425 categories changed from male-dominated to non-male, and 22 changed from non-male to male-dominated. It would be incorrect to assume that an occupation classified as male-dominated in 1970 is still male-dominated in 1985. For example, the 1970 category "shipping and receiving clerks" was firmly male-dominated in 1970, with women accounting for only 13 percent of workers in this category. However, by 1988, this category increased its female percentage to 28 percent (Reskin and Roos 1990). A woman entering the occupation of "shipping and receiving clerk" in 1988 would no longer be entering a male-dominated occupation.

Because of the shifting gender composition of occupations, I have incorporated the shifting gender composition of both the workforce as a whole, and of three-digit occupation categories in particular, into my analysis. Beginning from the assumption that in a labor force

that is exactly fifty percent female, a reasonable cutoff to define "male-dominated" might be 25 percent (that is, half of the percentage of females in the labor force), I choose cutoff points for each of the four decades under review that are based on the total percentage of females in the labor force at each Census year. Using a single, static measure such as the 30 percent commonly used seems unreasonable when women account for 33 percent of the total labor force, as in 1960. Table 3 contains the relevant cutoff points. In order to use the cutoffs for 1960, 1980, and 1990, I needed to express the occupational structure of each of these Census years in the 1970 three-digit occupation categories—a difficult task, because the U.S. Census Bureau changes its three-digit occupation categories each decade. Several Census documents helped me accomplish this. First, 1960 and 1970 had similar occupation structures, and the Census Bureau prepared just such a conversion, based on a sample of recoded 1960 occupations data (U.S. Bureau of the Census 1972). The 1970 percentages were arrived at directly from Census data (U.S. Bureau of the Census 1973); 1980 and 1990, however, were much more difficult. For the 1980 Decennial Census, the Census Bureau radically altered the set of three-digit occupation categories that it had been using. In a technical paper, the Bureau recoded a large sample of *1970* occupations into the new 1980 categories, and recorded the percentages of 1970 occupation categories that were recoded into different 1980 categories (U.S. Bureau of the Census 1989). Using these *percentages*, I did the reverse. I calculated the percentage of 1980 occupation categories that made up each 1970 category. Of course, these percentages are based on 1970 data, not 1980 data, so this method of converting the 1980 census into 1970 categories is not entirely accurate, though it is better than using the 1970 data throughout the analysis. Finally, the 1990 three-digit occupation categories are very similar to the 1980 categories, so I simply used the same percentages I used for the 1980 data to recode the 1990 Census occupation data to 1970

categories. From this, I could compute the percentage female in each occupation category, for each Decennial Census, and use the cutoff points defining a male-dominated occupation that I described above to decide whether a particular job transition was a movement into or out of a male-dominated occupation. This method of attempting to hit the "moving target" of shifting sex composition of occupations over time yields fewer transitions to male jobs than would occur if just the 1970 cutoffs were used (not shown).

The second part of this analysis uses the coefficient estimates from the event history analysis to project the composition of the labor force to the year 2025. Beginning from the percentages of women who began in each of my three states in 1960, I use my estimated hazards for a variety of covariate combinations to ascertain which determinants of occupational sex-type choice make an overall difference in the levels of occupational sex segregation in the labor force.

Covariates

The covariates used in these event-history models are divided into five sets of variables. The first, control variables, include number of jobs held, number of periods of home spells, time period, and years of education. They are included so that the covariates of interest are not influenced by the heterogeneity of women's varied career paths and beginnings of periods at risk. The number of job transitions and home transitions is controlled using time-varying covariates. Years of education is included in the list of controls not to indicate level of education—this will be addressed later—but rather as an indicator of the delay of entry into the period of being at risk for movement among the three states in my model.

The second set of variables is background variables. These are intended to measure the degree to which a woman was socialized into a more feminine gender identity. In preliminary analysis, I investigated a wide variety of background variables that I thought might be proxies for

the rigidity of a respondent's gender role socialization. I focused on variables which might indicate modeling of non-traditional gender norms by significant others, including measures of family characteristics, high school and college interests, and measures of the women's occupational aspirations. For the final models, I choose only those variables which showed significant effects on the hazards of a woman entering or exiting a male-dominated occupation category.[7] All of these variables are fixed in time, except the aspirations covariate. The WLS obtained measures of respondents' job aspirations both in 1957 and in 1975. I use the gender type of the 1957 aspiration for month-records up to the 1975 interview date, and the 1975 aspiration for month-records after the 1975 interview date. I expect that women with aspirations for male jobs have had a less-rigid gender role socialization, and will move more quickly into male-dominated occupations and less quickly out of them. Similarly, I expect that women who grew up with brothers, and whose mothers worked in a male-dominated occupation will experience higher rates of moving into male-dominated occupations, as exposure to "male" experiences and nontraditional experiences while growing up would produce a less-rigid socialization into gender roles. I expect women in both the highest IQ quartile and the lowest high school rank quartiles to move more quickly into male-dominated occupations relative to other women. Prevailing gender norms of the late 1950s suggested that women were not intelligent, but at the same time, expectations were that women should get good grades. Women with low IQ and high grades, then, should enter male-dominated occupations more slowly, and

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[7] Background variables that were considered, but not included in the final model, were: number of older brothers, number of sisters, number of older sisters, father worked in a female-dominated occupation when respondent was in high school, father worked in a blue-collar occupation (crafts, operatives, laborers, and farm occupations), mother worked for pay, mother's SEI was in the highest/lowest quartile, mother's and father's educational level was in the highest/lowest quartiles, father's SEI, family income when respondent was in high school, and farm background.

exit them more quickly for the same reason.[8] Included in the background variables are a measure of whether a woman's college major was in a male-dominated field. I mapped the majors of the WLS women to those in a table listing the number of Bachelor's degrees conferred on women and men in 1965 by major field of study (U.S. Bureau of the Census, 1967, p. 140). Majors for which twenty percent or fewer of the Bachelor's degree recipients were women in 1965 were designated as "male" majors.

Family variables comprise the third set of variables. All of the variables in this group are time-dependent; that is, dummy variables are coded to '1' when an event occurs in the time corresponding to a month-record. Marriage, childbearing, and single parenthood are considered. For example, the value of the marriage variable for a never-married woman is '0' until she marries, at which point it is set to '1'. If the woman divorces or becomes widowed, the marriage variable is reset to '0', and a remarriage will again turn the indicator back to '1' (up to three marriages are allowed). If the family variables are to follow predictions made by neoclassical economic theories, then I expect all covariates to significantly increase the time to enter a male-dominated occupation, and significantly decrease the time to exit.

Fourth, the characteristics of jobs and human capital are included to measure the opportunity costs of women's labor force behavior. These variables are time-varying also, changing as a woman moves through her career. They include the occupational status of the job, measured by the Duncan SEI,[9] part-time status, and the woman's educational attainment.

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[8] Special thanks to Robert Hauser for suggesting this interpretation of the gender norms of the late 1950s.

[9] The Duncan SEI is a widely used indicator of occupational ranking, based on education and income data from the 1950 U.S. Census. Duncan estimated his original SEI scores via a regression equation predicting occupational prestige from two major occupational attributes obtained from the 1950

Because SEI scores contain information about the wages for an occupation, I expect women holding high SEI jobs to be slower to make the transition to male-dominated occupations. Similarly, I expect women who are working part-time to be slower to enter a male occupation, as neoclassical economic theories predict that male jobs pay women less for their human capital accumulation and are less flexible than female-dominated occupations. Measures of level of education are included in this group of variables also, because they are indicators of a woman's human capital accumulation. College attendance or college degree (versus high school graduation only) are the indicators of educational attainment. Table 4 describes each of the covariates that were included in the final event history models, Table 2 presents descriptive statistics for the job-level variables, and Table 5 presents descriptive statistics for each of the education, background, and family variables.

Finally, demand-side variables are operationalized by including state-level percentages of women in the labor force, unemployment rates, percentage of employees in manufacturing industries and percentage of employees in service industries. Percentage of economic growth (percent change in GNP in the year), percentage of employees in "white-collar" jobs (managerial, professional, technical, clerical, and sales) and percentage of employees in "blue-collar" jobs (crafts, operatives, and laborers) are measured at the national level only. The data for these labor force characteristics were obtained from Statistical Abstracts of the U.S. from 1958 to 1995, and means and standard deviations for the variables (before conversion to z-scores) are reported in Table 6. Where state-level data were missing for a year, the national level of the variable was substituted. State residence for the respondents was measured at high school graduation (all

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Census: 1950 educational attainment and 1949 income levels (Duncan 1961).

respondents were Wisconsin residents), and was asked about in 1964, 1970, and 1975. In the 1992/93 survey, respondents were asked to give the state where their job was located; thus, a complete record of state residence is obtained for the 1975 through 1992/93 period.

Several of the covariates included in this analysis have missing data. The part time status of jobs, number of brothers, and aspirations variables have missing values for some records. In all cases, respondents with missing data on these covariates were coded to '0' on the variables of interest, and a dummy for missing data was included in all event history models run. The percentage of respondents with missing data on these variables is presented in Table 5. Most coefficients for missing data were not significant; because of this, only significant missing data coefficients are presented in Table 7.

The descriptive statistics presented in Table 5 provide some interesting results, despite the lack of incorporation of time into the analysis. From Table 5, we can see that WLS women who have ever worked in a male-dominated occupation are different from the WLS women who have never entered such an occupation. They are less likely to have received a college degree, more likely to have aspirations for a male-dominated occupation (both in 1957 and in 1975), and are more likely to have three or more brothers. The mothers of women who worked in male jobs were more likely to have been employed in a male-dominated occupation themselves. WLS women who ever entered a male occupation category had lower high school grades, married younger, had their first birth earlier, and were more likely to be a single parent than WLS women who have never entered a male-dominated occupation (each of these differences are significant at the .05 level). Many of these differences in the characteristics of the women who enter male-dominated occupations remain significant when time is incorporated into the analysis, through the use of event history models.

Preliminary Analysis

Preliminary investigation of the survival curves for both home and job transitions are monotonically decreasing (figures not shown). Either the Gompertz or the Weibull models would be appropriate for this data, as both increase or decrease with time (Allison 1984). I choose the Weibull[10] underlying proportional hazard model to estimate both the base hazard rates for these transitions, and also for the estimation of the coefficients of the covariates:[11]

$$\mu(t_{ij}) = \exp(\alpha_0)\exp(\gamma_1 \ln(t_{ij}))\exp(\beta X_{ij})$$

A graph of the log of the negative log of the survival function (or loglogs, not shown) shows a line that is nearly straight, lending more confidence to the use of the Weibull for the baseline hazard.

The other preliminary analysis I performed used log rank tests to narrow the possibilities for background covariates added to the model.[12] The log-rank test statistic is derived by comparing the number of actual events (movement to/from a male-dominated occupation) from the number expected, for categories of a covariate. A chi-square statistic is used to determine whether the numbers of events occurring in each group are what one would expect under the null hypothesis of no difference between the two groups (Allison 1995). The WLS is very rich in

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[10] Weibull baseline hazards are best if the hazard plateaus at the tail, while Gompertz should be used if the hazard continuously declines (Palloni, personal communication). Graphs of the hazards show this plateau at the tail (not shown).

[11] CTM software (Yates, Yi, Honore, and Walker 1987) is used to estimate the Weibull-based models with the covariates.

[12] SAS software (Release 6.09) was used to compute both the log-rank tests, and to evaluate the shape of the hazards in all three models.

background information about the respondents, and all of the variables which might indicate a respondent's sex role socialization could not be included in the final event history models. These log-rank tests were performed in order to choose a subset of variables which showed significant effects on the hazard of moving into or out of a male-dominated occupation.

Results

Please refer to Table 7 for the following discussion of event history analysis results.

Control Variables

A few interesting findings emerge from analysis of the control variables. First, it is clear that women exited the labor force from both male-dominated and non-male occupations about half as fast after 1970 relative to the late 1950s and early 1960s, and were about thirty percent quicker to enter the labor force (into either a male or non-male occupation) after a period at home than were women in the 1960s. Few significant effects of the number of jobs held, number of periods out of the labor force, or years of education (delay of entry into the period at risk beyond high school) were found; however, women who delayed entry into the risk period by attending college after high school were about ten percent slower to exit a male-dominated occupation for a non-male one.

Socialization (Family Background)

Many of the family background variables which were chosen to represent the degree to which a woman was socialized into the feminine sex role. These variables affected the odds of making transitions into and out of male-dominated occupations in ways which the gender role socialization theory would predict. A woman with three or more brothers enters a male-dominated occupation category from either a non-male occupation, or from a period out of the

labor force, over thirty percent faster than a woman with fewer than three brothers. This effect does not appear to be a family-size effect, as number of sisters was not similarly significant in affecting women's movement among occupational sex-types (log-rank tests, results not shown). Women whose own mothers worked in male-dominated occupation categories entered male jobs from a period out of the labor force over seventy percent faster than other women, though there was no difference between these groups in time to enter a male job from a non-male occupation category. Having aspirations for a job in a male-dominated occupation category is a highly significant predictor of the time to both enter and exit a male-dominated category. Women with male aspirations were about thirty percent slower to exit male occupations than other women, moved into a male occupation about fifty percent faster (from home) than other women, and moved into male occupations from non-male occupations over twice as quickly as other women. These effects of aspirations are significant even when other sources of socialization are held constant, including whether the woman was enrolled in a college-track academic program in high school (results not shown), or whether she was enrolled in a male-dominated college major (given that she attended college). These results provide evidence for the socialization theory of occupational sex segregation.

Human Capital/Opportunity Costs - Family Constraints

Covariates which measure a woman's family constraints provide interesting results, but do not confirm the human capital explanation for occupational sex segregation. Married women are slower to move into the labor force than non-married women, but once in the labor force, married women are over two times as quick to make *any* transition between male-dominated and non-male occupations; that is, there is no evidence that being married decreases the time to enter a female occupation relative to not being married, nor does it decrease the time to exit a male

occupation. Interestingly, women with children are much slower to exit the labor force from either a male-dominated or non-male occupation (about fifty percent slower), and are sixty percent quicker to enter the labor force from a period of home time than are women with no children (almost twice as fast if the entry is to a non-male job). There is no significant difference between women with children and childless women in their propensity to move between male and non-male occupations once in the labor force. Finally, like being married, becoming a single mother is associated with making all transitions more quickly than women who are not single mothers, except for movement into the labor force, for which there is no difference between the groups.

These findings contradict the notion that women with large family constraints will gravitate towards female-dominated occupations, because these jobs better accommodate their family demands, and reward them better in light of these demands. Women with large family demands appear to gravitate towards the labor force in general, and the sex-type of the occupation category does not seem to be a factor.

Human Capital/Opportunity Costs - Job Characteristics

Human capital theory also argues that women prefer female-dominated jobs because these jobs pay more and are more flexible than male-dominated jobs, which is important if women have multiple non-work responsibilities. Women who are in high-status female jobs, then, should be reluctant to move to male jobs, and women in part time female jobs should be similarly reluctant to move. Although several of the coefficients are in the predicted direction, few are statistically significant, indicating that there is little difference in the propensity to move into a male-dominated occupation for women, regardless of the SEI of the occupation they are currently in. Similarly, there is little difference in the time it takes to exit a male-dominated

occupation category, regardless of the status of that category to begin with. Being in a part-time job is significantly associated with a reluctance to enter male-dominated occupations—women who work part-time move from a non-male occupation to a male one about half as fast as other women. Finally, women who hold a college degree are about forty percent slower to enter a male occupation from one which is non-male, compared to women with less than a college degree.

The measures of job characteristics that I have at my disposal are admittedly crude, and it is difficult to ascertain definitively the "opportunity cost" element of human capital theory which uses the characteristics of jobs to predict the sex-type of a woman's occupation category. When combined with the lack of evidence that increased family obligations are associated with women's movement into male-dominated jobs, however, the human capital model looks less attractive as the mechanism through which occupational sex segregation occurs.

Demand-Side Characteristics

The final group of covariates which theoretically could affect a woman's hazard of entering or exiting a male-dominated occupation category are the characteristics of the local labor market. For example, if jobs in a manufacturing plant are plentiful, then the odds that she will work in a male-dominated occupation category increase. Including variables intended to measure the labor market conditions in a given state (where available), and a given year do little to increase our understanding of occupational sex segregation. Perhaps the most interesting finding from this part of the analysis is that economic growth (a one standard-deviation increase in GNP) is associated with women's moving sixty percent more slowly out of a male-dominated occupation and into a non-male one. Economic growth is (non-significantly) associated with faster movement into male occupations, as well. Again, several of these macro-level variables

are crudely measured so the local labor market situations are not modeled as well as I would like. Still, the effects of these variables on the movement of individual women across occupational sex-type boundaries appear to be small or non-existent.

Steady-State Results

An effect of a covariate on the individual behavior means little if, overall, the distribution of women in the occupational structure remains the same over time. For example, increasing the odds that an individual woman will enter a male-dominated occupation is not the same thing as increasing women's presence in male-dominated occupations in general, if the outflows from male-dominated occupations is equal to or greater than the inflows. In order to investigate how the individual characteristics tested in my hazard models would affect the distribution of women across all occupations in the labor force, I computed steady-state distributions based on selected levels of covariates.

To do this, I use the hazard rates estimated from the WLS sample (Table 7) to project the distribution of women across my three states (Figure 1) in the labor force as a whole. Using selected characteristics of women, and applying the hazard rates implied by the coeffecients to the distribution of women in the labor force as a whole, I can continually apply the transition rates over time, until they converge in a "steady-state" distribution of women across all three states in my model. These steady-states indicate the future distribution of women in occupation categories if *all* women in the labor force moved among states at the same rates as women with my selected covariate values. I evaluate the relative importance of one covariate over another in determining occupational sex segregation by seeing how the steady-state distribution is affected by the covariate(s) I choose.

In Figures 2 through 5, the lowest line on the graph (labeled "ACTUAL") is the percent

of women aged 16-65 who were employed in male-dominated occupation categories that census year (the definitions of male-dominated occupation are the same as those in Table 3). These percentages are quite low; they reached a peak around 1980 at 4.4 percent, and have been decreasing since. It is against this low, relatively stable percentage that the steady-state distribution of women under particular conditions can be compared.

In Figure 2, I examine the effects of family covariates projected into the twenty-first century. First note that being married, married with children, or a single mother has long-term effects that human capital theory would predict. A labor force consisting only of married women without children, married women with two children, or single mothers with two children would see a long-term decline in the proportion of women in male-dominated occupations. Yet, a labor force consisting of only *single* (childless) women would also see the percent of the female population employed in male-dominated occupations decline to under four percent. If the human capital theory of occupational sex segregation were true, then we would expect that a labor force consisting of only non-married women with no children would *increase* the percentage of women employed in male-dominated occupations. I conclude that changes in family structures of women does little over the long-run to disrupt the distribution of women in male-dominated and female-dominated occupations, and out of the labor force.

Turning to Figure 3, the hazard rates associated with the job characteristics of women's employment are projected to 2025. Like Figure 2, these variables seem to have little effect on the distribution of women across the sex-types of occupations over the long run. If all women in the labor force held part time jobs, we would see the percentage of women employed in male-dominated occupation categories dwindle to just above two percent—a finding predicted by the human capital model of sex segregation. The distribution does seem to shift a bit as more

women are employed in low-SEI jobs. Over time, the occupational distribution would shift to having just under five percent of women employed a male-dominated job. Although the human capital theory does not say anything about the occupational sex-type choices of women in low-wage jobs, it appears that there is some advantage for women in low-status jobs to move to male-dominated occupations. None of these job-level variables make dramatic long-term shifts in the occupational distribution, however. Again, variables which the human capital model posit as causes of occupational sex segregation do not appear to affect the steady-state distribution of women in the occupational structure.

In Figure 4 I have projected a select set of measures of labor market conditions which may have a long-term effect on the distribution of women across occupations. Clearly, economic growth has the largest effect on occupational sex segregation, with positive growth increasing women's proportion in male-dominated occupations to about six percent, while a one standard deviation decline in the GNP each year is associated with just about two percent of women working in male-dominated jobs. Neither the percentage of the workforce that is female nor unemployment appear to have any effect on the distribution of women throughout the occupational structure.

Returning to the socialization theory of occupational sex segregation, in Figure 5, the dramatic and enduring effect of having aspirations for a male occupation can be seen. At a time when women entered male-dominated occupations at the highest rates (1970s), if every woman in the labor force had aspirations for a male occupation, the percentage of women employed in male occupation categories would have increased to almost thirteen percent. Even after the rates of movement to male occupations slowed after 1980, the enduring effect of having male aspirations can be seen. Extending the hazards to the year 2025, well over eight percent of

women would be employed in a male-dominated occupation category, double the highest percentage that has actually occurred.

Majoring in a "male" subject in college was also associated with large shifts in the occupational structure, at least up until 1980. The trend then reverses itself, and falls below six percent by 2025. The importance of the subject studied in college on the eventual occupational distribution is evident here, even with the projected decline of the percentage of women in male occupations with male college majors. Compare this projection with that for all college graduates. Increases in rates of college graduation do not threaten to disrupt the distribution of women across occupational sex-types at all. Finally, note that having a mother in a male job slightly affects the distribution of women in the labor force in the long run. Although a feedback loop is not included in this projection, increasing numbers of women in male jobs over time seems likely to contribute to increasing risk of their daughters entering male jobs as well.

Finally, in Figure 6 I attempt to decompose the strong effects of having male aspirations into early aspirations and late aspirations. These projections are, again, performed on married women with two children. It seems that the effects of early (1957) aspirations remain strong over time. It is not until twenty years after the 1975 aspirations "take effect" that the later (1975) aspirations have a stronger effect than the early (1957) aspirations—and the difference between them is not large. Note that having aspirations for a male occupation consistently through the life course indicates the largest long-term change in the occupational distribution. If all women held aspirations for a male-dominated job throughout their lives, then according to these projections we would see over twelve percent of the female labor force employed in male-dominated occupation categories. Such a large percentage would surely make a great number of individual occupation categories become sex-neutral, reducing the total number of male-

dominated occupation categories.

Discussion

These results support the theory that sex role socialization is an important mechanism through which occupational sex segregation is perpetuated in the U.S. labor force. This conclusion warrants some discussion, as supply-side explanations of occupational sex segregation have been looked upon somewhat suspiciously by feminist researchers because they have often become a justification for not improving women's access to male-dominated occupations (Milkman 1986; Epstein 1988; Rhode 1990). At the same time, this paper can be added to support the findings of other researchers who find a significant link between background characteristics and the sex-type of a woman's occupational choice. How are these results to be interpreted?

First, the danger in attributing occupational sex segregation to the influence of sex role socialization is clear in light of the 1988 EEOC v. Sears, Roebuck, & Co. case. To say that women are socialized to prefer working in traditionally female fields is to say that women are taught to be different from men, and that their occupational choices are necessarily different. The resulting occupational sex segregation, then, is a natural consequence of women's difference from men, and as such is not problematic. It is on this argument that Sears won its case against the EEOC.

Yet, the supposition that women are freely "choosing" to not work in traditionally male occupations cannot be deduced from the observation that they are socialized into the female gender role. On the contrary, I believe we are constricting the choices of both women and men when we raise them to "prefer" only one type of occupational activity. As the results above

show, when individuals are freed from the expectation that they enter an occupation that is traditional for their gender, the entire distribution of the sexes in occupational categories can change. Constraining the choices of women through their socialization as females is what Jacobs means when he argues that "social control" is the mechanism through which occupational sex segregation is perpetuated in our society. Jacobs suggests that later mechanisms of control, such as experiences on the job, are more important for keeping women out of male-dominated occupations in the aggregate than are early experiences such as occupational aspiration formation (Jacobs 1989b). My results suggest, however, that these early aspiration formations are terribly important to the long-term occupational choices of women, not only individually, but in the aggregate as well.

One criticism of Jacobs's work is that he did not adequately specify the agents of social control, and this criticism can certainly be applied to the work done here. I have not been able to identify a variable which explains where a woman's occupational aspirations come from, or how those aspirations might be indicative of her less-restrictive sex role socialization. Despite the large number of background variables I have included in my analyses (including many not shown here), the influence of occupational aspirations remains strong and significant. These aspirations are extremely important in reproducing occupational sex segregation—more important than Jacobs acknowledges in his work. I am not arguing against the notion of "lifelong social control," rather I am arguing that the early control exerted by sex role socialization has enduring effects on the occupational choices of women (See also Roos 1990).

Conclusion

In my analysis of a cohort of high school graduates from Wisconsin, I have improved

upon several established traditions of research in occupational sex segregation. I have allowed the occupational categories to shift among male-dominated, sex-neutral, and female-dominated classifications, I have included local labor market information in the event history models of individual occupational mobility, and I have projected the long-term effect of aggregate levels of sex segregation using the hazard rates derived from my analysis. My results show that early sex role socialization, and occupational aspirations in particular, play an integral part in reproducing occupational sex segregation in the aggregate. This finding supports Jacobs' (1989b) notion of lifelong social control which works to keep levels of occupational sex segregation high, but places much more importance on the influences of early controls in keeping the distribution of men and women in the occupational structure stable.

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TABLE 1. WLS SAMPLE DESCRIPTION

Sample Characteristic	N	Percent
Total WLS Sample	10,317	100.00
Total Women in WLS Sample	5,325	51.61
Total Men in WLS Sample	4,992	48.39
Female Respondent in 1975 or 1992/93	5,042	94.69
Ever Worked, 1957-1992/93	4,990	98.97
Ever Worked in Male-Dominated Occ.	819	16.24
Ever Exited Male-Dominated Occ. (% of ever worked in male occupation)	560	68.38
Male Respondent in 1975 or 1992/93	4,571	91.57
Ever Worked, 1957-1992/93	4,563	99.82
Ever Worked in Female-Dominated Occ.	243	5.32
Ever Exited Female-Dominated Occ. (% of ever worked in female occupation)	88	36.21

TABLE 2. WLS JOB CHARACTERISTICS

Variable	Women		Men	
	Mean	S.D.	Mean	S.D.
Number of Job Spells	3.5	(1.8)	2.1	(1.2)
Months in Job	64.1	(66.8)	95.7	(93.0)
Job SEI	45.8	(19.7)	47.9	(26.0)
Job Part-Time (%)	0.3	(0.5)	0.0	(0.1)
Months in Sex-Atypical Job	77.5	(76.2)	90.8	(92.2)
Sex-Atypical Job SEI	42.8	(24.0)	52.4	(18.4)
Sex-Atypical Job Part-Time (%)	0.2	(0.4)	0.0	(0.2)
Number of Home Spells	2.0	(1.2)	-	-
Months in Home Spell	75.7	81.4	-	-

TABLE 3. DEFINITION OF MALE-DOMINATED OCCUPATION

Census Year	Percent Female in Labor Force	Male-Dominated: Percent Female and Below	Female-Dominated: Percent Female and Above	Applicable for Jobs Which Begin:
1960	33%	17%	67%	Prior to July, 1965
1970	38%	19%	69%	July, 1965 to June, 1975
1980	43%	22%	72%	July 1975 to June, 1985
1990	46%	23%	73%	After June 1985

TABLE 4. VARIABLE CONSTRUCTION

Group/Covariate	Time Vary?	Description
Background		
Male Aspiration	Y	1=1957 (1960)* job aspiration was male for record-months to 1975; 1975 (1970)* job aspiration was male for record-months after 1975 0=1957 (1960)* job aspiration was not male for record-months to 1975; 1975 (1970)* job aspiration was not male for record-months after 197.
3 or More Brothers	N	1=Respondent has three or more brothers 0=Respondent has less than three brothers
Mother in Male Job	N	1=Mother's occupation while growing up is Male-Dominated (1960)* 0=Mother's occupation while growing up is not Male-Dominated (1960)*, or mother did not work
IQ in Highest Quartile	N	1=IQ 75th percentile and above 0=IQ below 75th percentile
IQ in Lowest Quartile	N	1=IQ 26th percentile and below 0=IQ above 26th percentile
High School Rank in Highest Quartile	N	1=High school rank 81st percentile or above 0=High school rank below 81st percentile
High School Rank in Lowest Quartile	N	1=High school rank 35th percentile or below 0=High school rank above 35th percentile
Family		
Married	Y	1=Married in record-month 0=Not married (never married, divorced, widowed) in record-month
1-2 Children	Y	1=Respondent has 1 or 2 children in record-month 0=Respondent has 0 children, or 3 or more children in record-month
3 or More Children	Y	1=Respondent has 3 or more children in record-month 0=Respondent has 0, 1, or 2 children in record month
Single Mother	Y	1=Respondent is a single parent (through premarital birth, divorce, widow) in record-month 0=Respondent is not a single parent in record-month
Job Characteristics		
SEI in Highest Quartile	Y	1=Job respondent held in record-month has SEI 619 and above 0=Job respondent held in record-month has SEI below 619
SEI in Lowest Quartile	Y	1=Job respondent held in record-month has SEI 350 and below 0=Job respondent held in record-month has SEI above 350
Part Time	Y	1=Job respondent held in record-month is part-time (less than 35 hours per week) 0=Job respondent held in record-month is full-time
Attended College	N	1=Respondent attended a college/university 0=Respondent never attended college
Degree	N	1=Respondent received any college degree 0=Respondent did not receive any college degree

(continued on next page)

(Table 4 continued from previous page)

Group/Covariate	Time Vary?	Description
Demand		
% Female in Labor Forc	Y	Z-Score of percent of U.S. labor force that is female, 1957 - 1993
% Unemployment in Lal Force	Y	Z-Score of percent unemployed in state, 1957 - 1993
% Manufacturing	Y	Z-Score of percent of state employees in manufacturing industries, 1957 - 1993
% Service	Y	Z-Score of percent of state employees in service industries, 1957 - 1993
% Growth	Y	Z-Score of change in U.S. GNP during year, 1957 - 1993
% White Collar	Y	Z-Score of percent of U.S. employees employed in Professional, Technical, Managerial, Clerical or Sales occupations, 1957 - 1993
% Blue Collar	Y	Z-Score of percent of U.S. employees employed in Crafts, Operatives, or Laborer (non-farm) occupations, 1957 - 1993

* Years in parentheses refer to Census year data used to determine whether occupation is male-dominated.

TABLE 5. WLS SAMPLE DESCRIPTION - COVARIATES

	All Women (N=5,042)		Ever Worked (N=4,990)		Ever Out of Labor Force (N=4,452)		Ever Worked in Male Job (N=819)	
Group/Covariate	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Background:								
Male Aspiration: 1957	0.04	(0.20)	0.04	(0.20)	0.04	(0.19)	0.07	(0.28)
1975	0.11	(0.31)	0.11	(0.31)	0.11	(0.31)	0.26	(0.44)
Male Asp. Miss.: 1957	20.5%		20.3%		20.0%		22.8%	
1975	30.1%		29.8%		29.3%		29.3%	
Number of Brothers	1.7	(1.6)	1.7	(1.6)	1.5	(1.6)	1.9	(1.7)
No. Brothers Missing	0.5%		0.4%		2.9%		0.1%	
Mother in Male Job	0.03	(0.18)	0.03	(0.18)	0.03	(0.17)	0.05	(0.22)
Mother's Occ. Missing	0.6%		0.6%		0.5%		0.5%	
IQ	50.7	(28.3)	50.8	(28.3)	51.0	(28.1)	51.8	(28.0)
High School Rank	57.3	(27.7)	57.5	(27.7)	57.6	(27.5)	55.2	(27.8)
Male Major (All)	0.01	(0.10)	0.01	(0.10)	0.01	(0.10)	0.02	(0.15)
Male Major (College Only)	0.05	(0.22)	0.05	(0.22)	0.05	(0.22)	0.14	(0.35)
Male Major Missing	4.8%		4.5%		3.1%		4.5%	
Family:								
Marry	0.95	(0.22)	0.95	(0.22)	0.96	(0.18)	0.97	(0.18)
Age 1st Marriage	21.31	(3.65)	21.31	(3.66)	21.27	(3.05)	20.81	(3.31)
Children	0.91	(0.29)	0.91	(0.29)	0.87	(0.34)	0.92	(0.27)
Age 1st Birth	22.75	(3.67)	22.76	(3.67)	22.74	(3.56)	22.17	(3.38)
Number of Children	2.88	(1.65)	2.87	(1.65)	2.95	(1.61)	2.98	(1.65)
Single Parent	0.26	(0.44)	0.26	(0.44)	0.27	(0.44)	0.34	(0.47)
Age Single Parent	35.43	(9.53)	35.47	(9.53)	35.62	(9.46)	35.18	(9.08)
Human Capital:								
Attend College	0.40	(0.49)	0.40	(0.49)	0.40	(0.49)	0.39	(0.48)
College Degree	0.23	(0.42)	0.23	(0.42)	0.23	(0.42)	0.19	(0.39)

TABLE 6. MEANS AND STANDARD DEVIATIONS OF LABOR FORCE CHARACTERISTICS

Covariate	State-level vs. National	Mean	S.D.
% Female in Labor Force	State	42.85	4.04
% Unemployed in Labor Force	State	6.28	2.22
% Employees in Manufacturing Industries	State	21.78	10.14
% Employees in Service Industries	State	18.48	5.93
% Change in GNP	National	3.09	2.57
% Employees in White Collar Occupations	National	50.96	6.48
% Employees in Blue Collar Occupations	National	32.52	4.11

TABLE 7. RELATIVE RISK OF MAKING TRANSITION AMONG MALE-DOMINATED AND NON-MALE DOMINATED OCCUPATIONS, AND OUT OF THE LABOR FORCE

	Male Job -> Non-Male Job		Male Job -> Out of Labor Force		Non-Male Job -> Male Job		Out of Labor Force -> Male Job		Non-Male Job -> Out of Labor Force		Out of Labor Force -> Non-Male Job	
Covariate	Exp(B)	B/SE(B)	Exp(B)	B/SE(B)	Exp(B)	B/SE(B)	Exp(B)	B/SE(B)	Exp(B)	B/SE(B)	Exp(B)	B/SE(B)
Number of Jobs	0.98	-0.31	0.91	-1.59	0.96	-0.65	0.97	-0.51	0.98	-1.52	**1.08**	5.25
Number of Home Spells	0.95	-0.68	1.12	1.62	1.18	1.84	**1.33**	4.03	0.99	-0.63	**1.14**	7.54
Number of Years College	**0.89**	-1.98	0.93	-1.66	1.02	0.53	0.99	-0.37	0.99	-0.93	**0.99**	-1.80
1970 - 1980	1.14	0.48	**0.52**	-4.35	1.39	1.34	**1.86**	4.91	**0.57**	-15.24	**1.32**	8.47
1980 - 1990	1.45	1.29	**0.42**	-4.79	1.29	0.99	1.07	0.42	**0.37**	-20.96	**1.16**	3.55
After 1990	1.52	1.23	**0.44**	-3.25	0.92	-0.24	0.66	-1.39	**0.43**	-12.89	1.01	0.23
3 or More Brothers	1.12	0.73	0.99	-0.11	**1.38**	2.21	**1.33**	2.87	0.98	-0.61	**1.05**	1.95
Mother Worked in Male Job	1.47	1.33	0.90	-0.54	1.00	0.01	**1.70**	2.75	**0.89**	-2.18	1.05	0.82
IQ Highest Quartile	1.15	0.75	0.98	-0.17	1.24	1.22	0.99	-0.09	0.99	-0.32	1.05	1.50
IQ Lowest Quartile	0.83	-0.93	0.88	-0.99	0.81	-1.16	**0.77**	-2.35	**0.94**	-2.30	0.97	-1.04
HS Rank Highest Quartile	1.29	1.37	1.06	0.40	0.89	-0.60	1.05	0.37	**0.90**	-3.55	0.99	-0.45
HS Rank Lowest Quartile	1.10	0.51	1.03	0.27	1.17	0.88	1.20	1.64	**1.11**	3.63	0.99	-0.33
Male Aspiration	**0.67**	-2.06	0.77	-1.68	**2.17**	3.59	**1.57**	2.47	0.96	-0.74	0.99	-0.25
Male Major	1.88	1.03	1.01	0.01	1.79	0.83	**2.57**	2.42	0.88	-0.86	**0.73**	-2.18
Missing - Major	0.79	-0.65	0.58	-1.93	1.02	0.05	0.73	-1.38	**0.68**	-5.30	**0.59**	-6.99
Married	**2.37**	2.28	**2.64**	5.58	1.74	1.62	0.86	-0.60	**2.98**	30.62	**0.63**	-7.34
One-Two Kids	0.91	-0.35	**0.52**	-4.02	1.16	0.53	**1.59**	2.24	**0.55**	-18.19	**1.97**	11.99
3 or More Kids	0.84	-0.61	**0.56**	-3.08	1.27	0.81	1.48	1.83	**0.45**	-19.35	**1.85**	10.53
Single Mom	**3.79**	3.16	**3.73**	5.35	**2.21**	2.04	1.36	1.04	**2.46**	14.92	0.97	-0.42
SEI Highest Quartile	1.40	1.71	--*	--*	0.87	-0.67	0.73	-1.80	--*	--*	**0.57**	-13.29
SEI Lowest Quartile	0.76	-1.38	--*	--*	**1.50**	2.18	0.75	-1.78	--*	--*	**0.65**	-10.75
Part Time	1.44	1.66	--*	--*	**0.51**	-3.01	0.72	-1.76	--*	--*	**0.85**	-4.04
Missing - Part Time	0.64	-0.90	--*	--*	1.30	0.89	**0.50**	-2.26	--*	--*	**0.66**	-5.96
Attended College	1.21	1.02	1.07	0.48	1.16	0.85	0.99	-0.10	1.02	0.57	**1.08**	2.40
College Degree	1.18	0.56	1.26	0.90	**0.57**	-2.14	0.83	-0.84	1.04	0.78	**1.19**	3.63
% Women in State Labor Force	0.96	-0.45	1.11	1.26	1.05	0.55	1.03	0.48	**1.03**	1.94	1.00	0.24
% Unemployed in State	1.02	0.17	0.91	-1.09	0.98	-0.29	0.97	-0.43	**0.97**	-2.21	0.99	-0.48
% Manufacturing in State	1.22	0.54	0.76	-1.30	0.70	-1.37	1.10	0.53	0.97	-0.60	0.97	-0.58
% Services in State	1.06	0.13	0.93	-0.30	0.94	-0.21	1.01	0.06	1.01	0.20	1.06	1.07
% Growth (GNP)	**0.41**	-2.22	0.79	-1.37	1.15	0.33	1.07	0.48	**0.93**	-1.98	1.04	1.03
% White Collar (U.S.)	0.20	-0.91	6.68	1.51	0.35	-0.64	2.94	0.99	1.33	1.11	1.06	0.20
% Blue Collar (U.S.)	0.17	-1.23	4.41	1.43	0.27	-0.95	3.22	1.31	1.01	0.07	1.36	1.31
Intercept	**0.00**	-10.06	**0.02**	-11.91	**0.00**	-15.56	**0.00**	-21.04	**0.02**	-60.58	**0.02**	-47.04
Gamma	**1.20**	2.06	0.98	-0.30	1.09	1.09	1.03	0.48	**0.90**	-8.89	1.01	0.53

* Coefficients could not be estimated due to collinearity. **Bold coefficients are significant at the .05 level.**

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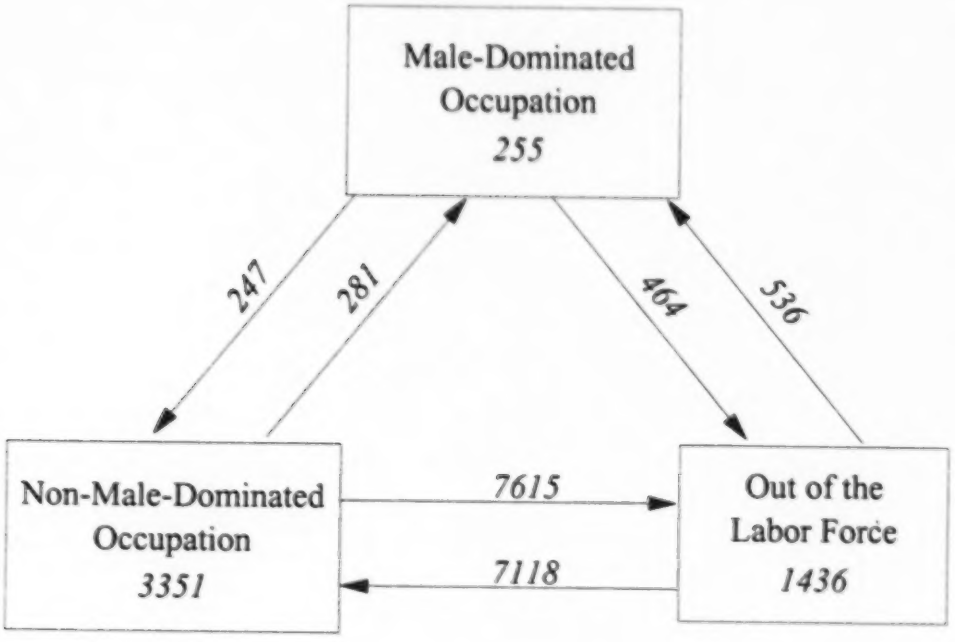
FIGURE 1. EVENT HISTORY MODEL (N=5,042)



Numbers in italics indicate numbers of respondents moving between states, or staying within a state.

FIGURE 2. STEADY-STATE PERCENTAGE OF FEMALES (16-65) IN MALE-DOMINATED OCCUPATIONS - FAMILY VARIABLES

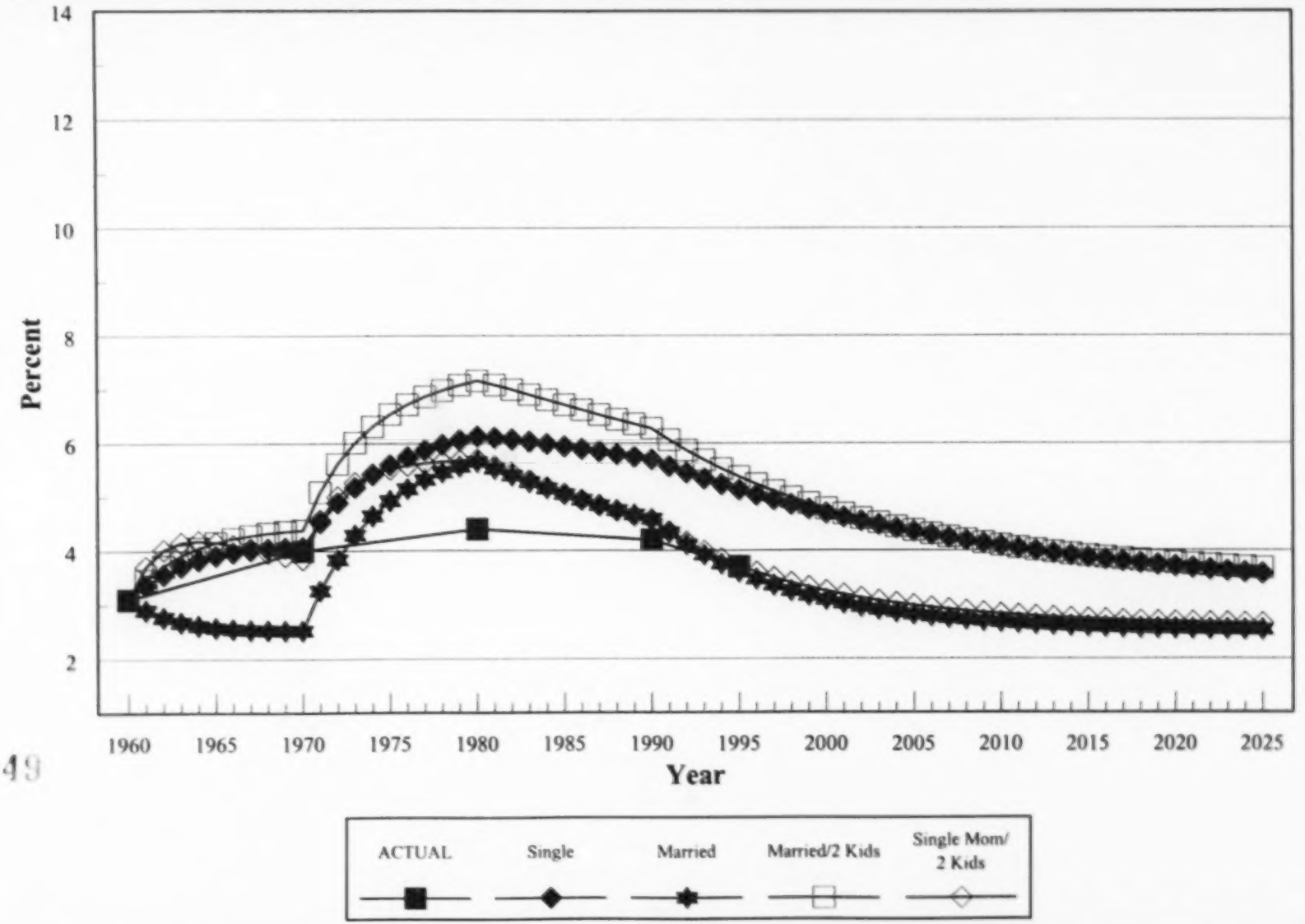


FIGURE 3. STEADY-STATE PERCENTAGE OF FEMALES (16-65) IN MALE-DOMINATED OCCUPATIONS - JOB VARIABLES

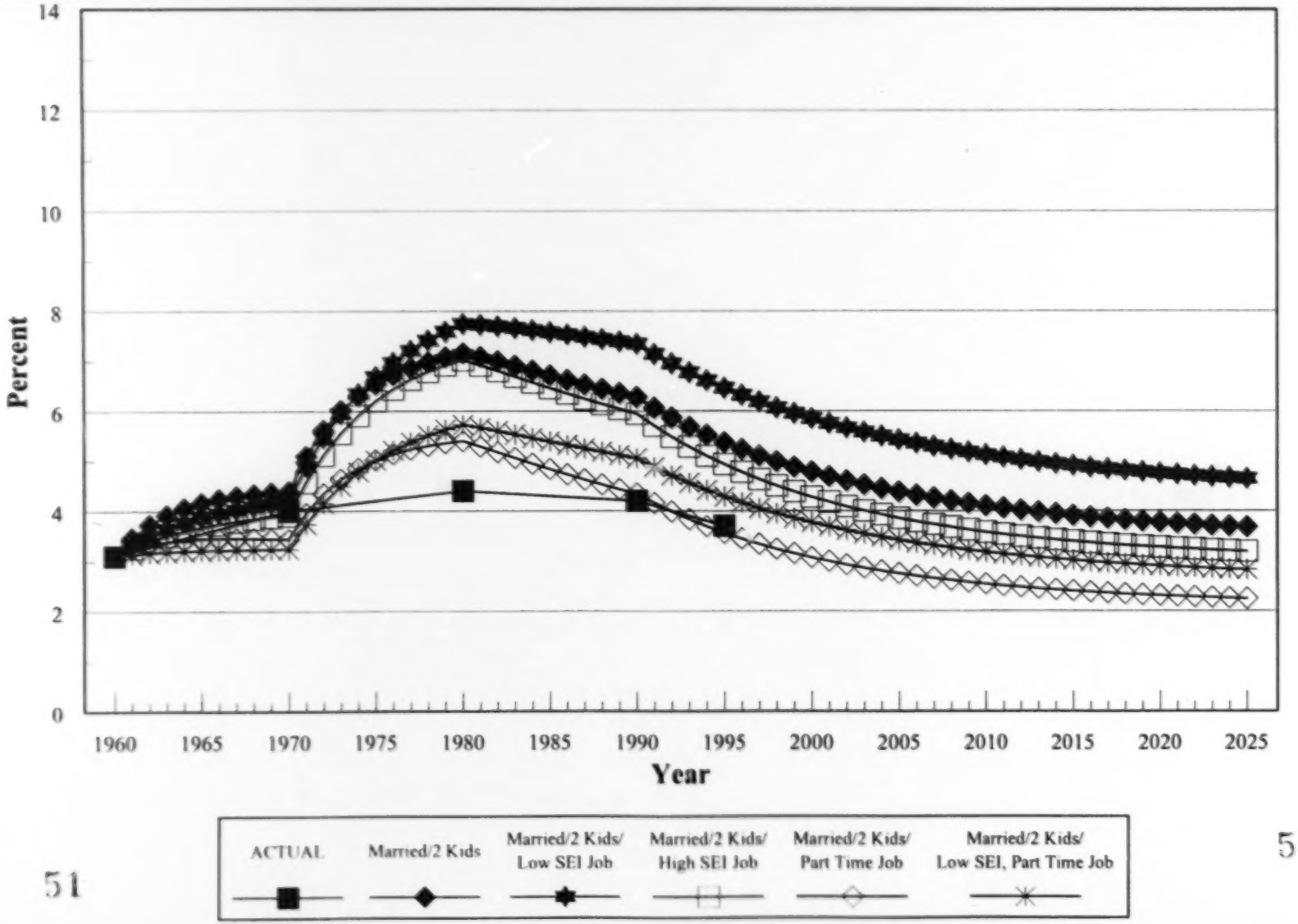


FIGURE 4. STEADY-STATE PERCENTAGE OF FEMALES (16-65) IN MALE-DOMINATED OCCUPATIONS - DEMAND VARIABLES

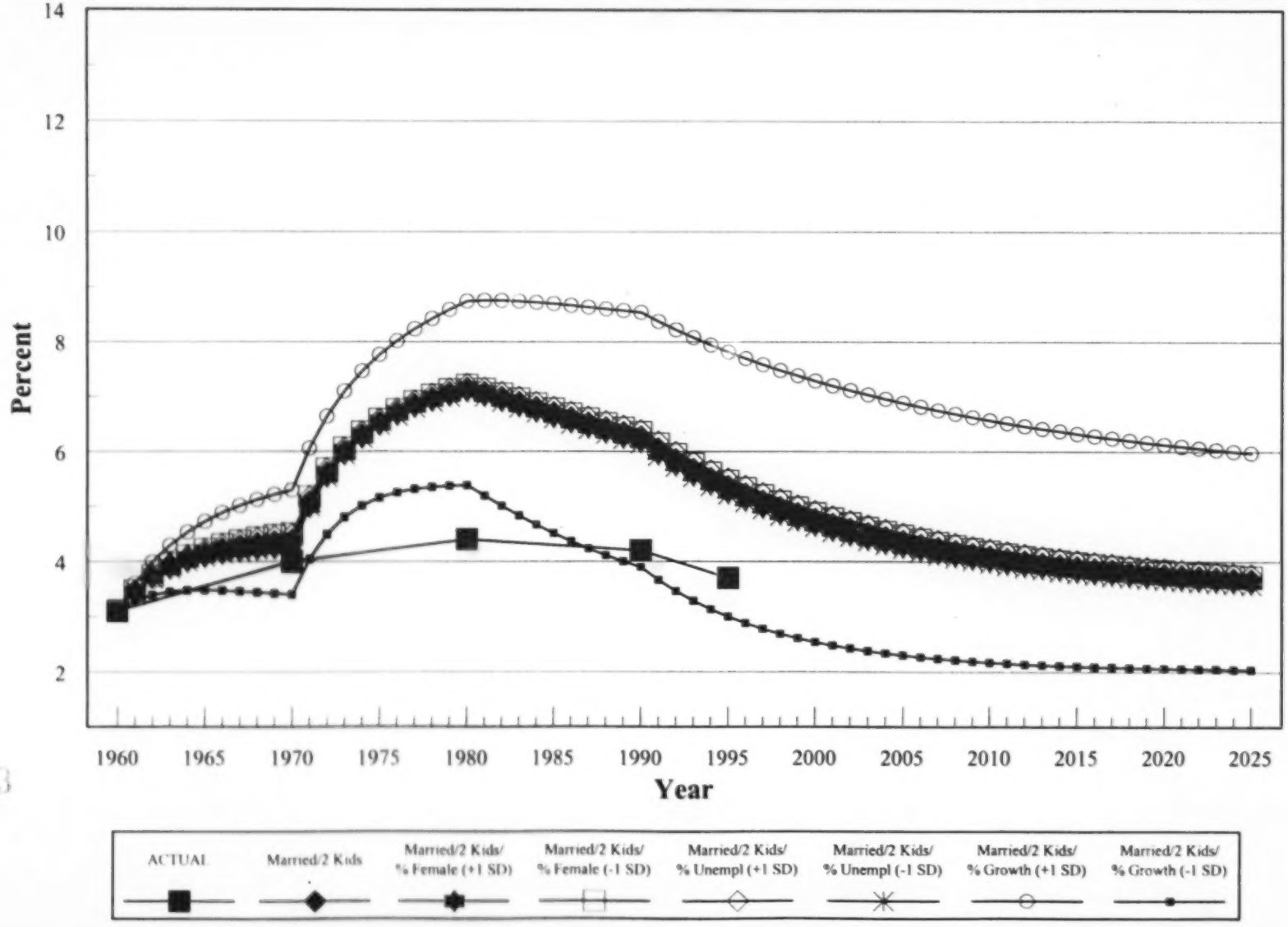


FIGURE 5. STEADY-STATE PERCENTAGE OF FEMALES (16-65) IN MALE-DOMINATED OCCUPATIONS - BACKGROUND VARIABLES

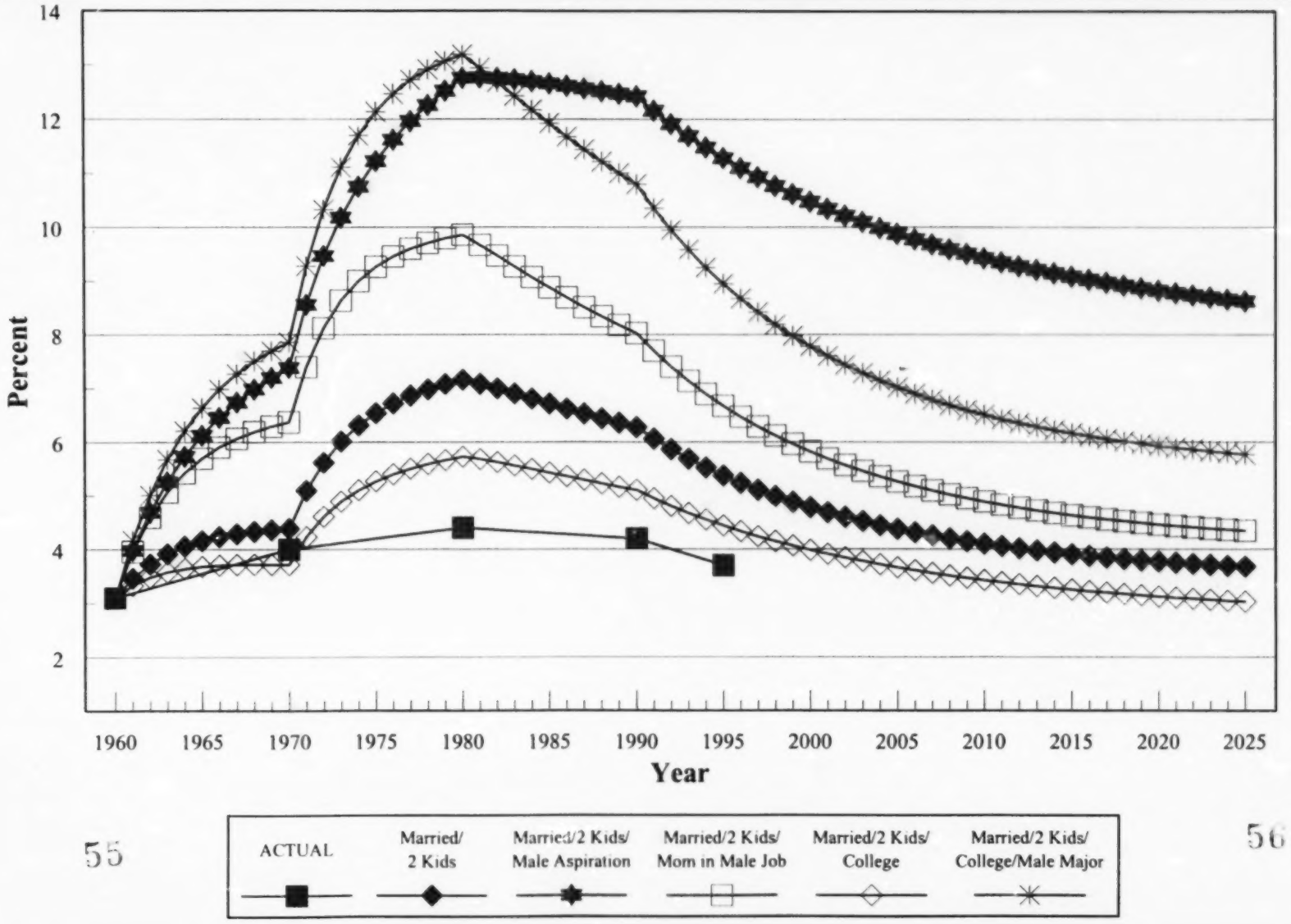
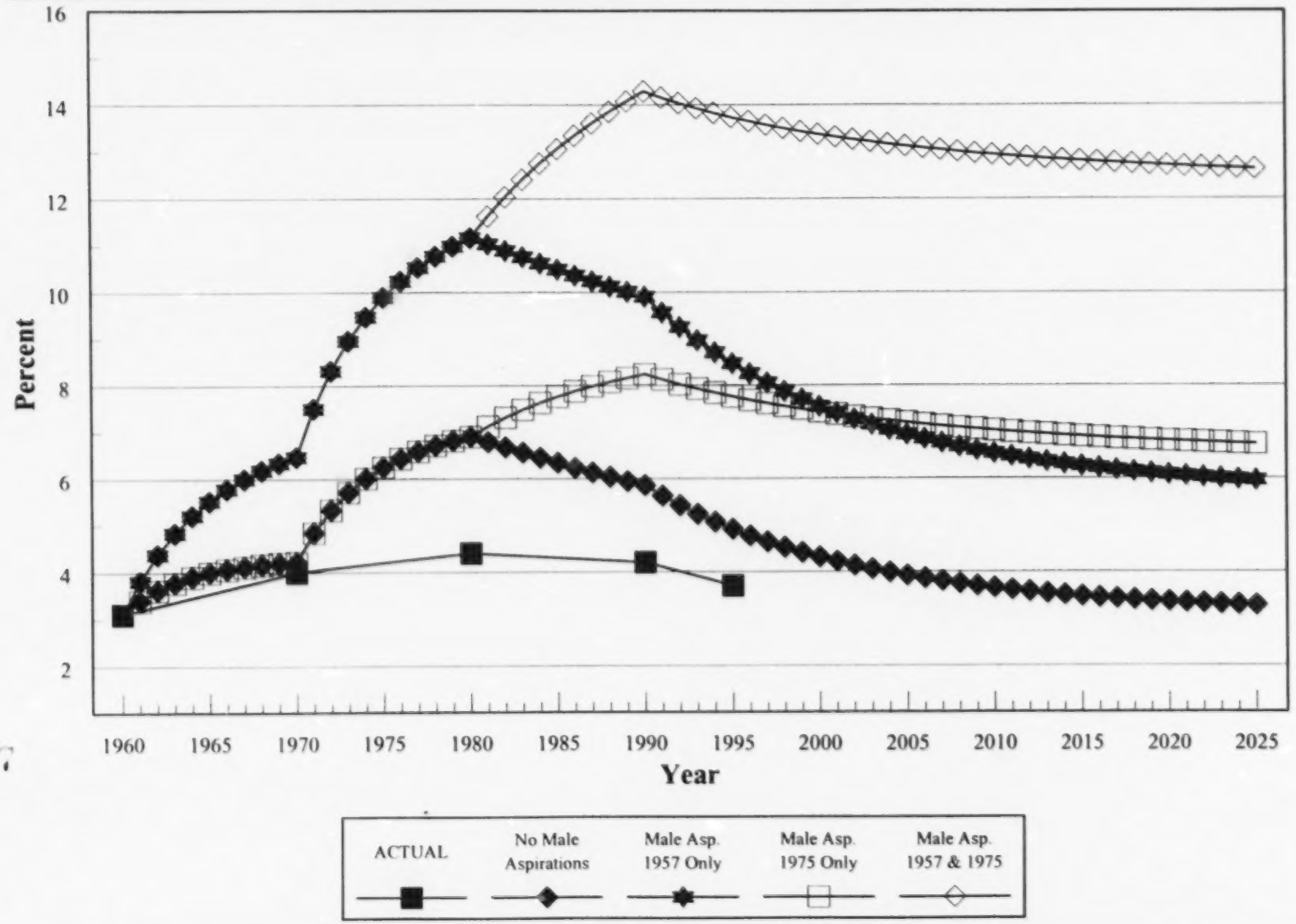


FIGURE 6. STEADY-STATE PERCENTAGE OF FEMALES (16-65) IN MALE-DOMINATED OCCUPATIONS - ASPIRATIONS FOR MALE OCCUPATIONS



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